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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/555,714	07/27/2006	Jorg Kowalczyk	P/2107-285	9742
2352 7590 08/05/2009 OSTROLENK FABER GERB & SOFFEN 1180 AVENUE OF THE AMERICAS NEW YORK, NY 100368403			EXAMINER BLAND, LAYLA D	
			ART UNIT 1623	PAPER NUMBER
			MAIL DATE 08/05/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/555,714	KOWALCZYK ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	LAYLA BLAND	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-46 and 73-81 is/are pending in the application.
- 4a) Of the above claim(s) 14, 15, 19, 20, 39-42, 45, 46 and 76 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 16-18, 21-38, 43, 44, 73-75 and 77-81 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/8/2009, 6/25/2009</u> .                                     | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 25, 2009 has been entered.

This Office Action is in response to Applicant's request for continued examination (RCE) filed June 25, 2009, and amendment and response to the Final Office Action (mailed March 26, 2009), filed June 25, 2009. Applicant's declaration of Dr. Alireza Haji Begli submitted June 25, 2009 under 37 CFR 1.132, is acknowledged and will be further discussed below.

Claims 1-46 and 73-81 are pending. Claims 14, 15, 19, 20, 39-42, 45 and 46 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on March 4, 2008. Claims 1-13, 16-18, 21-38, 43-44, 73-75, and 77-81 are examined on the merits herein.

The following rejections of record are maintained.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-13, 16-18, 21-38, 43-44, 73-75, and 77-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Biella et al. (Journal of Catalysis, 206, 242-247, 2002, PTO-1449 submitted November 4, 2005) in view of Fuertes et al. (US 4,985,553,, January 15, 1991, PTO-1449 submitted November 4, 2005) and Biella et al. (Catalysis Today 72 (2002) 43-49, PTO-1449 submitted November 4, 2005).

Biella et al. (Journal of Catalysis) teach the selective oxidation of glucose to gluconic acid using gold on carbon catalyst [see abstract]. The particle size was 2-5 nm and the support had a final gold loading of about 1 wt% [page 243, 2.2.1]. Reactant/metal ratio was about 1000. Experiments were done by bubbling dioxygen through an aqueous slurry, at atmospheric pressure (1 bar), at pH 7, 8, or 9.5, at 323 K (about 50°C). When the pH was not controlled, experiments were done at 30 kPa (3 bar) and 363 K (90°C) [page 243, 2.3]. Very high (>99%) selectivity was obtained [page 246, 3.3]. The gold catalyst has improved activity and selectivity over palladium or platinum catalysts [page 242, Introduction].

Biella et al. do not teach oxidation of oligosaccharides such as the elected species maltose, and teach carbon support instead of metal oxide solid support.

Fuertes et al. teach a process for selective oxidation of di-, tri-, oligo-, and polysaccharides using an oxygen-containing gas in the presence of a noble metal based catalyst such as palladium, platinum, rhodium, or osmium on solid support [see abstract]. Disaccharides such as lactose are contemplated [column 2, lines 1-16]. Solid supports including alumina and titanium oxide are taught [claim 16]. The quantity of catalyst used should be between 0.005 and 1 wt% with respect to the polysaccharides [column 3, lines 58-63]. The reaction temperature should be between 20°C and 90°C [column 3, lines 65-68]. The pH should be between 7.5 and 11.0, preferably between 8.0 and 10.0 [column 4, lines 13-15].

Biella et al. teach application of gold catalysts to selective liquid phase oxidation, using SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, TiO<sub>2</sub>, or C as solid support [page 45, Table 1]. Oxidation of glucose is taught [page 38, 3.5].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to oxidize maltose using the method of Biella et al. (Journal of Catalysis), and to modify that method to include solid supports such as Al<sub>2</sub>O<sub>3</sub> or TiO<sub>2</sub> in place of carbon. The Supreme Court in KSR reaffirmed the familiar framework for determining obviousness as set forth in *Graham v. John Deere Co.* (383 U.S. 1, 148 USPQ 459 (1966)), but stated that the Federal Circuit had erred by applying the teaching- suggestion-motivation (TSM) test in an overly rigid and formalistic way. KSR, 82 USPQ2d 1385. Exemplary rationales that may support a conclusion of obviousness include simple substitution of one known element for another to obtain predictable results.

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In this case, the skilled artisan could arrive at the claimed invention by simple substitution of one known element for another. The prior art teaches a method which differs from the claimed method by the substitution of some components (oxidation of glucose, gold on carbon support) with other components (oxidation of maltose, gold on metal hydroxide support). Gold catalysts on metal hydroxide supports, used in oxidation reactions, are known in the art as an alternative to gold on carbon. Gold catalyst is known in the art as an attractive alternative to platinum or palladium catalyst, and has been used to oxidize glucose. Oxidation of maltose, which is a disaccharide formed from two glucose molecules, using platinum or palladium catalyst is known in the art. Thus, the skilled artisan could have substituted maltose for glucose, or metal hydroxide solid support for carbon solid support, and would have predicted similar results, because these are all known in the art as alternatives.

### ***Response to Arguments***

Applicant argues that the claimed catalyst on metal oxide support is an improvement over the catalyst on carbon support because it has a long durability, and presents the declaration of Dr. Haji-Begli in support. Applicant argues that this data is sufficient to demonstrate unobviousness for the claims. However, Applicant's examples are not commensurate in scope with the claims. Applicant's Example 3 was carried out with 0.5% Au/TiO<sub>2</sub> catalyst at 40°C and pH 9. The examples in the declaration of Dr. Haji-Begli were carried out using 0.3% Au/Al<sub>2</sub>O<sub>3</sub> or 1.0% Au/Al<sub>2</sub>O<sub>3</sub>. The particle size in these examples is unclear, and particle size is known in the art to be an important parameter for catalyst activity. The claims are much broader than Applicant's examples.

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The broadest claims require no particular metal oxide support and are not limited by temperature, pressure, pH, or concentration of gold. Onal (English translation of XXXVth Annual Meeting of German Catalysis Scientists, March 20-22, 2002, Weimar Conference Proceedings, PTO-1449 submitted April 8, 2009) teaches that particle size and varied reaction conditions, especially pH, exert a significant influence of the activity of the catalyst [page 2]. Thus, Applicant's examples are not sufficient to establish unexpected results over the entire claimed range when reaction conditions are known to influence catalyst activity. See MPEP 716.02(d): Whether the unexpected results are the result of unexpectedly improved results or a property not taught by the prior art, the "objective evidence of nonobviousness must be commensurate in scope with the claims which the evidence is offered to support." In other words, the showing the unexpected results must be reviewed to see if the results occur over the entire claimed range.

Applicant argues that the Biella (Catalysis Today) reference teaches away from the use of gold on metal oxide support because gold on metal oxide demonstrates less selectivity and lower activity/turnover than gold on carbon, that Onal teaches that activated carbon is preferable as a support material over transition metal oxides, and that there are disadvantages of metal oxide carriers in platinum or palladium catalysts, as taught by Venema. As was set forth in the previous office action, a teaching that particular embodiments are preferred or more effective than others is not a teaching away. See MPEP 2123: "Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments." *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971), and "A known or obvious

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composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use.” *In re Gurley*, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994). Furthermore, it is not clear from Venema’s teachings that the leaching is caused by the metal oxide carrier compared to activated carbon.

For these reasons, the rejection is maintained.

### ***Conclusion***

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAYLA BLAND whose telephone number is (571)272-9572. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Anna Jiang can be reached on (571) 272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Layla Bland/  
Examiner, Art Unit 1623

/Shaojia Anna Jiang/  
Supervisory Patent Examiner  
Art Unit 1623